

CASE REPORT

Primary cutaneous CD30+ anaplastic large-cell lymphoma in a young patient with psoriasis

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ABSTRACT

Psoriasis is a common chronic inflammatory cutaneous disease, while primary cutaneous CD30+ anaplastic large-cell lymphoma (PC-ALCL) is a rare T-cell lymphoma which always has an excellent prognosis, although multifocal PC-ALCL tends to relapse after systemic chemotherapy. Psoriasis associated with PC-ALCL is exceptionally rare. We report a 29-year-old Chinese female with a 5-year history of psoriasis treated with Chinese herbs alone, who was referred to our institution with a tumor on the left clavicular region for 1 year and another one on the left palm for 2 months. Skin biopsies of both lesions showed diffuse infiltration of tumor cells, composed of large atypical cells with marked nuclear pleomorphism, prominent nucleoli, and eosinophilic cytoplasm. Large numbers of neutrophilic infiltrations were also noted in the lesion. Immunostaining revealed the lesion to be positive for CD30, vimentin, CD45, and CD68, and weakly positive for epithelial membrane antigen, but negative for anaplastic lymphoma receptor tyrosine kinase. The patient was diagnosed to have psoriasis associated with PC-ALCL; she died 18 months after the final diagnosis with unknown cause. We consider that immune dysregulation and/or Chinese herbs may play roles in the development of the present PC-ALCL.

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Introduction

Psoriasis is a common, chronic inflammatory disease that always involves the skin and occasionally, the joints. Although it can occur at any age, psoriasis most commonly afflicts the adult population.¹ It has serious impacts on health-related quality of life and increases health care costs.^{1,2} Furthermore, psoriasis has been thought to be associated with an increased risk of cancer, including skin cancer and lymphoma,^{1–7} due to its dysregulated immune function and the potential carcinogenicity of therapeutic agents, or a combination of these factors.^{2,8} Moreover, psoriasis associated with primary cutaneous CD30+ anaplastic large cell lymphoma (PC-ALCL) in the therapeutic course of cyclosporine has been previously reported.⁷

We describe a psoriasis patient who developed PC-ALCL, and to our knowledge, such a condition is exceptionally rare.

Case report

A 29-year-old Chinese female had been affected by psoriasis vulgaris since 2004, which was confirmed by biopsy (Figure 1). She had intermittently received oral treatment of traditional Chinese herbs alone (no details) in the community clinic since then. In October 2007, she noticed an asymptomatic reddish painless papule on her left clavicular region, which gradually enlarged and grew to be a tumor with surface erosion. In April 2008, she was started on a low-dose methotrexate therapy (10 mg/week) because of severe psoriatic lesions; this was carried out for 6 months and resulted in significant improvements for psoriatic lesions but poor response for the tumor. In August 2008, during her anti-psoriatic therapeutic course, another red papule appeared on her left palm which began to swell. Both tumors did not respond to oral or topical antibiotics, and topical steroids.

She had never received any other medications except the therapies mentioned above. No other medical history including mycosis fungoides and lymphomatoid papulosis (LyP) was reported, and no family members were similarly affected. The patient denied pain, pruritus, weight loss, or any other associated symptoms since the initial presentation of tumor.

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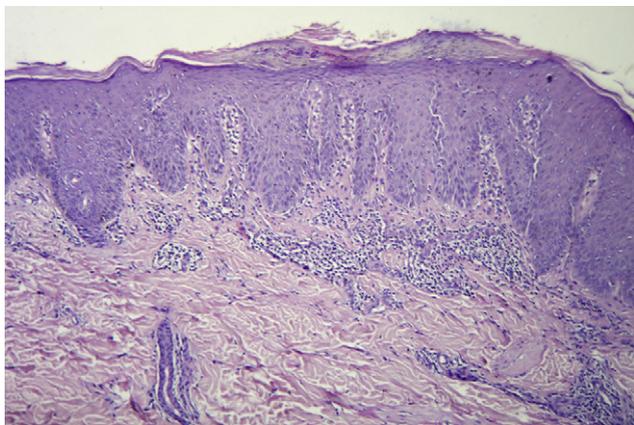


Figure 1 There is epidermal hyperplasia with long, test-tube-shaped rete ridges and thinning over the dermal papillae. The granular layer is absent, and there is overlying parakeratosis. Munro microabscesses are present in the stratum corneum. There is a perivascular mononuclear cell infiltrate. (Hematoxylin and eosin, original magnification, 150 \times .)

Cutaneous examination showed a reddish-violet tumor about 10 \times 9 cm in size on the left distal clavicular region, which was soft and painless with ulcerated surface and sero-sanguinous discharge (Figure 2A). The tumor was not attached to the surrounding tissue. Another tumor, measuring 7 \times 5 cm, was located on the thenar margin of her left palm (Figure 2B). There was no regional lymphadenopathy. Chest X-ray (Figure 3A) and B-ultrasound for abdomen and pelvis showed no systemic or nodal involvement (Figure 3B), and retroperitoneal lymph nodes were not observed. Laboratory work-ups showed normal urinalysis, complete blood count, and serum chemistries. Peripheral smear revealed no atypical lymphocytes.

Biopsies taken from both lesions showed similar features: diffuse tumor cells infiltration. The tumor was composed of large atypical cells with marked nuclear pleomorphism, prominent nucleoli, and eosinophilic cytoplasm. Large numbers of neutrophilic infiltrations were also noted in the lesion (Figures 4A and 4B). Immunohistochemical staining showed that the tumor cells were positive for CD30 (>75%, Figure 4C), vimentin, CD68, and CD45; weakly positive for epithelial membrane antigen (EMA) (Figure 4D), CD20; but negative for CD3, CD4, CD8, anaplastic lymphoma receptor tyrosine kinase (ALK), actin, myoglobin, CK5/6, CK8/18, CD56, CD79 α , UCHL1, S-100, and HMB-45.

The tumors were diagnosed as PC-ALCL. Because of financial constraints, the patient gave up any medical therapies and died 18

months after the final diagnosis. The patient was free from psoriasis at her last visit and at the time of death. The cause of death remained unknown.

Discussion

Primary cutaneous CD30-positive T-cell lymphoproliferative disorders include PC-ALCL, LyP, and other miscellaneous entities.⁹ Clinically, both PC-ALCL and LyP present with varied manifestations, leading to difficulty in diagnosis; however, some of LyP may progress to PC-ALCL.¹⁰ The tumors reported here showed positive for CD30 in majority of the cells and positive for EMA, but negative for ALK. Based on the history, clinical appearance, pathologic features, and immunomarkers, there was no doubt about the diagnosis of cutaneous CD30+ ALCL in the present case. As both lesions showed the same pathologic features, they were considered to have the same origin. Although the present case was weakly positive for EMA, which is frequently expressed in systemic lymphoma and cutaneous involvement secondary to systemic ALCL, positive EMA may also be rarely stained in PC-ALCL as a previous report demonstrated that one out of 10 PC-ALCL cases expressed EMA,¹¹ and in multiple myeloma associated with PC-ALCL as well.¹² ALK expression is exceptionally rare and probably entirely absent in PC-ALCL.¹³ Considering that the patient lacked peripheral and/or abdominal lymphadenopathy, systemic involvement, B symptoms, and was negative for ALK, we considered her cutaneous lesions to be primary tumor rather than systemic or secondary.

It is clear that medications for psoriasis may prove carcinogenic for patients. For example, systemic therapies such as methotrexate, cyclosporine, and mycophenolate mofetil increase the risk of lymphoproliferative disorders¹; long-term psoralen combined with ultraviolet A therapy is associated with an increased risk of basal cell carcinoma and melanoma,¹ but UVB seems to have no such associations.¹ On the other hand, patients with psoriasis have higher risks for malignancy compared to the general population.^{1,2} The present patient had a 5-year history of psoriasis before her PC-ALCL, and had been treated only with traditional Chinese herbs. As some Chinese herbs have been demonstrated to have carcinogenicity, we considered that immune dysfunction and/or traditional Chinese herbs may play important roles in the development of the tumors. Considering the respective frequencies of the two entities, we also could not exclude the possibility that their associations may be fortuitous. We did not consider that methotrexate played a carcinogenic role, since the initial lesion appeared before the patient was treated with methotrexate.

PC-ALCL usually occurs in the elderly, has male predilection, and has a favorable prognosis with spontaneous regression in some

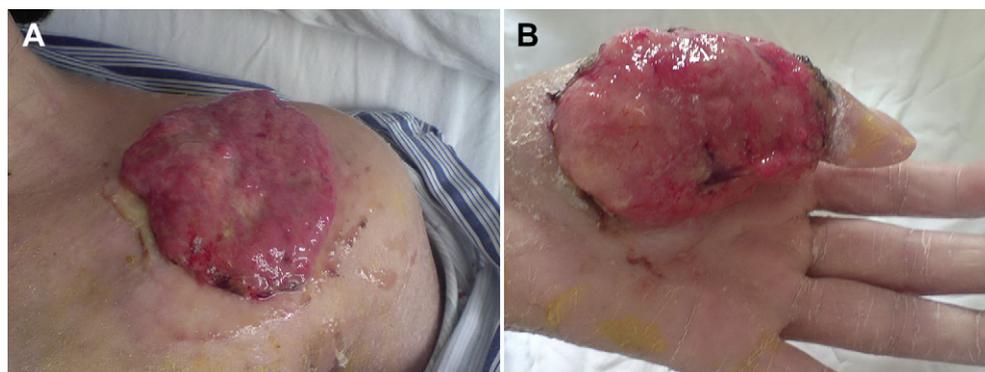


Figure 2 Reddish-violet cutaneous tumors on (A) left distal clavicular region and (B) the thenar margin of the left palm.

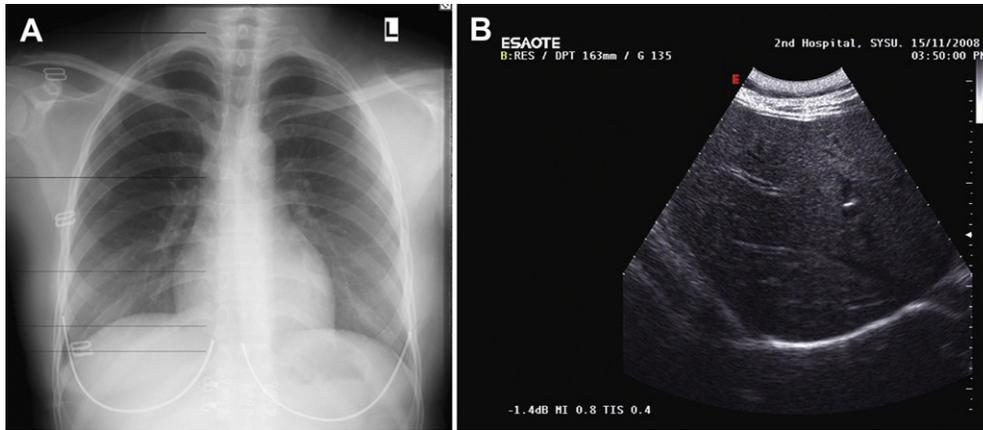


Figure 3 (A) Chest X-ray shows clear lung fields except for a shadow on the left shoulder. (B) Sonography reveals a clear liver.

cases. On the other hand, its systemic counterpart usually afflicts children and adolescents, and has worse prognosis.^{7,9} Interestingly, the patient was only 28 years old when her initial ALCL lesion appeared, and had a poor prognosis even though her cause of death was unknown.

PC-ALCL patients with multifocal skin lesions and with involvement of regional lymph nodes show a similar prognosis to those with only skin lesions. In localized forms and solitary lesions, local radiotherapy, simple surgical excision, low-dose methotrexate,^{14,15} and interferon alone or in association with bexarotene are the mainstay therapeutic options.⁹ In patients with large tumor burden, rapid progression of cutaneous lesion, and extracutaneous involvement, systemic chemotherapy should be recommended.⁹

However, the initial lesion of the present patient failed to respond to the previous anti-psoriasis therapy with low-dose methotrexate, and a second lesion even developed during the therapeutic course. The reason for such a response remains unknown. It also suggested that low-dose methotrexate may not always be a good option for PC-ALCL.

Our case is notable for psoriasis associated with PC-ALCL, multiple tumor lesions as well as EMA-positive immunoreactivity of the tumor cells, and having survived for only 30 months since the initial lesion appeared. It is also notable that her tumors had poor response to low-dose methotrexate. The poor prognosis showed that untreated PC-ALCL in adolescents may not always have favorable prognoses.

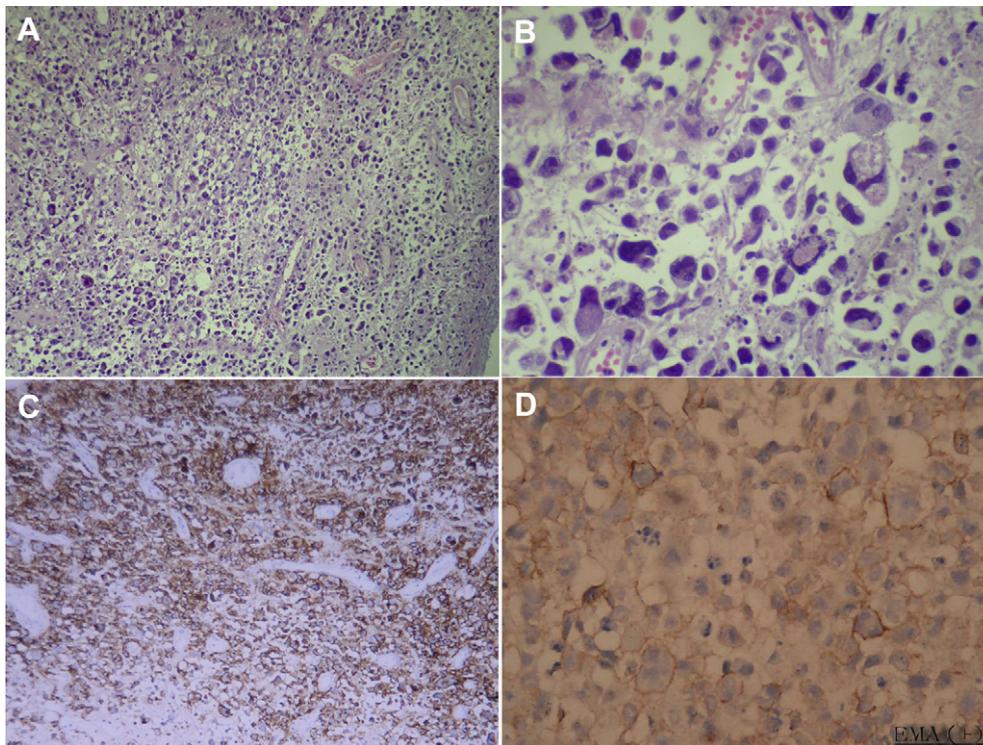


Figure 4 (A,B) Skin biopsy shows diffuse tumor cell infiltration, composed of large atypical cells with marked nuclear pleomorphism, prominent nucleoli, and eosinophilic cytoplasm (hematoxylin and eosin; original magnification: A 100 \times , B 400 \times). The tumor cells are positively stained for (C) CD30 (immunohistochemical staining; original magnification, 40 \times) and (D) EMA (400 \times).

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